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SOME METABOLIC DISTURBANCES IN DOMESTIC STOCK FOLLOWING INJECTION OF 4:4'-DIAMIDINO 1:5 DIPHENOXY-PENTANE

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It has long been known[1] that hypoglycaemia follows the administration of guanidine to rabbits. In a search for less toxic derivatives, later workers[2] prepared synthalin and found that it also produced marked hypoglycaemia. It was shown[3] that synthalin damaged the liver and interfered with its glycogenic function, whilst at the same time it caused sugars and muscle glycogen to disappear.

Trypanosomes require large quantities of sugars for their metabolism and, because guanidine derivatives produce hypoglycaemia, experiments were made to see if these compounds possessed trypanocidal powers. Two pairs of workers[4, 5] independently demonstrated that synthalin exerted a curative action on mice and rats infected respectively with *T. brucei* and *T. equinum*. It was then shown[6] that synthalin exerted a direct trypanocidal action and did not act indirectly through disturbances induced in the host's carbohydrate metabolism. This finding stimulated further search for trypanocidal agents[7] amongst guanidines, isothioureas, amines and amidines with long aliphatic carbon chains, and the most successful derivative found was n-undecane 1:11 diamidine. Aromatic groupings can replace the inert central carbon chains of these aliphatic amidine and guanidine compounds and some of these aromatic compounds possess trypanocidal activity. Dr. Ewins and his staff at Messrs. May & Baker, Ltd., took up the preparation of aromatic amidines and tests of their trypanocidal powers were undertaken[8]. It was found that 4:4'-diamidines were more active than the 3:4' or 3:3' compounds, and it became clear that 4:4'-diamidino-stilbene was the most active trypanocidal compound tested but that 4:4'-diamidino-diphenoxy-pentane or -propane also had high therapeutic indices.

Samples of certain aromatic diamidines were kindly supplied by Messrs. May & Baker to the Senior Veterinary Research Officer (Mr. S. A. Evans) for tests of their trypanocidal value in domestic stock. In the first test with 4:4'-diamidino 1:5 diphenoxy-pentane (M. & B. 800) three of five animals died after five weekly injections of 2 mgm./kilo bodyweight. Although these animals were found to be weakened by concurrent wireworm infection (*H. contortus*) so that the deaths could not in all three cases be ascribed directly to the action of the drug, it was decided to determine whether metabolic disturbances in domestic animals were sufficiently marked to impair their chances of surviving injections.

Previous work[9] has indicated that the alkyl diamidines resemble the guanidines in their action but do not affect carbohydrate metabolism so readily. Devine[10] studied the effect of undecane-diamidine on rabbits and found that blood urea is more than doubled by an easily tolerated dose, but that carbohydrate disturbance only results when the maximum tolerated dose (10 mgm./kilo) is given. Lethal doses of this drug cause relatively little kidney damage but injure the liver so that blood sugar and amino-acids are affected. The glycaemic effects of undecane-diamidine resemble in a general manner those found for synthalin[3] and other diamidines[9]. The hypoglycaemia appeared to run parallel to hepatic damage and the reduced ability of the liver to deaminise amino-acids, but was quite independent of renal damage.

Devine later repeated this work[11] with diamidino-stilbene and again found that damage to the kidneys was prior to, and independent of, hepatic injury. Repeated small doses had no effect on blood sugars or urea. A dose which is fairly well tolerated caused a rise in blood urea but no alteration in blood sugar level. Larger doses, which are tolerated with difficulty, or which eventually prove fatal caused increased and prolonged nitrogen retention accompanied by a short period of hyperglycaemia a few hours after injection.

Now all previous work on metabolic disturbances resulting from guanidine and diamidine administrations has been carried out on rabbits. It is well known that it is difficult to apply results obtained with small animals to the large domestic livestock, and so the results to be recorded will be of added interest in that, so far as we are aware, no record exists of the changes produced when such compounds are injected into the larger farm animals.

EXPERIMENTAL

The experimental work can be divided into three parts dealing respectively with cattle, sheep and goats.

CATTLE.—As mentioned earlier, three of the first five cattle treated with this drug died. Blood sugar estimations were made on three of these animals, on another beast treated with tartar emetic and on two healthy oxen. The three animals examined received

five weekly injections of a 1 per cent. solution of the drug in doses of 2 mgm./kilo liveweight. At the commencement of the series of injections all three oxen were harbouring *T. congolense* in their blood. A similar "fly-struck" ox was given five intravenous injections of tartar emetic and two other control healthy oxen were also bled. The results are shown in Table I.

These figures indicate that when given at the therapeutic level of 2 mgm./kilo liveweight no agonal hypoglycaemia develops in cattle treated with 4 : 4′-diamidino-diphenoxy-pentane. In the case of ox 6, which was one of the first examined, an isotonic glucose solution was injected but this had no permanent effect on the animal.

Sheep.—These sheep were given single graded doses of M. & B. 800 intravenously, and the clinical and *post-mortem* findings are shown in Table II.

Thus this compound agrees with other diamidino derivatives in causing shock at high dosing levels and in causing damage to the kidney more quickly than to the liver. The marked venous congestion in the visceral organs several days after the initial shock symptoms have passed off suggests that this drug can exert more than a transient effect on the sympathetic system.

Analyses of the blood sugar, urea and amino-acid contents were made at various intervals after the injection of these sheep, and the results are shown in Table III. It is realised that blood urea figures by themselves are not sufficient evidence for nitrogen retention consequent upon renal injury but, in view of the results obtained with these four sheep, it was not judged worth while to make the necessary urinary estimations.

There is, therefore, no evidence of hypoglycaemia but, in the cases of sheep 3 and 4, the blood urea increased and degeneration of kidney corticular tissue was observed. The blood amino-acids did not alter significantly but the degeneration found in the liver of sheep 4 may account for the slight rise in blood amino-acids as death approached.

These results are thus in harmony with previous work on other diamidines, that renal injury is prior to and independent of hepatic damage. A single dose of 2 mgm./kilo liveweight apparently had no disturbing influence, but with larger doses shock may occur and death follow. In the few cases examined no hyper- or hypoglycaemia was observed and liver damage was not sufficient to raise the blood amino-acids significantly. The blood urea changes, also, develop more slowly in sheep than in rabbits.

Goats.—Five goats were injected intravenously with this drug in a dose of 15 mgm./kilo liveweight each and then killed at intervals to allow microscopic examination of kidney and liver sections to be made. In this and the following sections very high doses were injected in the hope that any untoward consequences of the drug would thereby be made more obvious.

Goat No. 1.—Showed shock symptoms, similar to those described above for sheep 4, at the time of injection but recovered very much more quickly (5 to 10 minutes). It was killed the following day when the whole splanchnic area was found to be engorged. Microscopic examination showed the kidneys were normal but the liver showed cloudy swelling.

Goat No. 2.—Appeared normal after injection of the drug, and was killed three days later. *Post-mortem* examination revealed marked congestion of the splanchnic area but no other macro- or microscopical abnormalities.

Goat No. 3.—This goat showed no shock symptoms after injection and was killed five days later when the pulse was very weak. The heart was noticeably flabby and again marked visceral venous congestion was very obvious. The kidney cortex showed microscopic evidence of an old-standing disease-fibrosis, but the liver sections were normal.

Goat No. 4.—No shock symptoms were observed following injection and when killed seven days later nothing unusual was seen on *post-mortem* examination besides the marked venous congestion of the visceral organs and a flabby heart. Microscopically, the kidneys and liver appeared normal.

Goat No. 5.—This goat collapsed at the time of injection and was dead by the time the needle was removed from the vein. The heart appeared to stop at once.

These goat experiments show that when injected intravenously at the rate of 15 mgm./kilo liveweight, which is probably in the region of the maximum tolerated dose, 4 : 4′-diamidino 1 : 5 diphenoxy-pentane may cause shock and even death. *Post-mortem* examination of all animals surviving the injection showed marked venous congestion of the visceral organs, often accompanied by a flabby dilated heart. The results of the microscopic examinations of kidney and liver sections are not sufficiently consistent to allow conclusions to be drawn.

Two further goats were then given subcutaneous injections of this drug at the rate of 10 mgm./kilo liveweight. These animals showed no symptoms of shock but had painful swellings at the site of injection. They were bled at intervals and killed ten days after injection of the drug. Table IV shows the blood contents of sugar, urea and amino-acids.

In the two cases of the subcutaneous administration of 10 mgm./kilo liveweight of the drug no disturbances occurred in urea, sugar or amino-acids of the blood. It is interesting to compare this with the intravenous injection, at the rate of 10 mgm./kilo liveweight, in sheep 3, where the blood urea content was increased by 50 per cent.

After these experiments were completed two further goats were injected subcutaneously, and another intravenously with M. & B. 800 at the rate of 15 mgm./kilo liveweight. Venous congestion of the visceral organs was not observed in these animals even though the dose employed proved fatal in two cases. Also no painful swellings occurred at the site of injection in the two subcutaneously injected goats.

The toxicity and the reaction to subcutaneous injection varied in these tests not only between species but between individuals of the same species.

In connection with the shock symptoms mentioned above it is interesting to record that the carotid blood pressure in a chloroformed goat fell from 154 mm. to 98 mm. immediately following intravenous injection of the drug. Shock occurred only at the higher dosing levels and has been observed in sheep, goats and donkeys, but cattle have not been tested at these higher rates of injection.

TABLE I

Blood Sugar Values in Oxen after Five Weekly Injections of 4 : 4′-Diamidino-diphenoxy-pentane. (*May & Baker* 800)

Ox. No.	History	Blood Sugar mgm/100ml.	Remarks
1	Healthy control	51·2	Normal health.
2	Healthy control	63·9	Normal health.
3	*T.c.*, followed by five weekly injections of tartar emetic	58·3	Liveweight improving and apparently treated successfully.
4	*T.c.*, followed by five weekly injections of M. & B. 800	66·1	Apparently successfully treated.
5	Do. do.	51·2	Moribund as result of toxicity of drug.
6	Do. do.	72·9	Declining rapidly, and died two days later. *Post-mortem* examination showed concurrent diseases.

TABLE II

Clinical and Post-mortem Observations on Sheep given Single Graded Doses of 4 : 4′-Diamidino-diphenoxy-pentane

Sheep No.	Rate of Injection	Clinical Observations	*Post-mortem* Observations
1	Nil	Remained in normal health	Nil
2	2 mgm./kg.	Remained in normal health	Nil
3	10 mgm./kg.	Went off its food and died two days later ...	Death took place in the night and putrefaction rendered detailed examination useless. Splanchnic area engorged. Kidney degeneration.
4	20 mgm./kg.	Definite symptoms of shock appeared a few minutes after injection and lasted about three-quarters of an hour. Rapid pulse, increased deep respirations, vomition, staggering and weakness. Appeared to recover, but went off food on third day and was killed *in extremis* on fifth day after injection	Pale mucous membranes but Tallqvist normal. Flabby heart and congested splanchnic area. Kidney section showed cortical degeneration whilst liver sections showed cloudy swelling.

TABLE III

Changes in Blood Sugar, Urea and Amino-acids following Intravenous Injection of 4 : 4′-Diamidino-diphenoxy-pentane nto sheep. (*Results in mgm./100ml. blood*)

Interval After Injection	Blood Sugar				Blood Amino-acids				Blood Urea			
	Sheep 1	Sheep 2	Sheep 3	Sheep 4	Sheep 1	Sheep 2	Sheep 3	Sheep 4	Sheep 1	Sheep 2	Sheep 3	Sheep 4
0 hours	48·86	50·44	52·04	49·56	4·0	5·5	4·2	5·4	18·0	18·0	18·1	18·4
4½ hours	48·36	50·44	69·38	42·12	5·1	5·2	5·4	5·6	19·8	17·6	16·0	19·6
8½ hours	46·84	45·84	47·08	49·34	4·7	4·4	4·3	5·1	19·8	17·4	22·2	21·0
1 day	53·31	54·01	54·51	52·04	4·3	4·6	4·8	5·3	18·0	18·6	26·4	22·8
2 days	50·00	53·98	61·95	46·60	5·0	4·1	4·1	4·9	17·6	20·0	32·7	26·8
4 days	52·88	60·71	dead	49·56	5·5	5·8	dead	5·8	18·4	19·8	dead	35·2
5 days	51·33	58·23	—	63·19	5·4	4·4	—	6·9	21·6	24·6	—	43·0
5½ days	—	—	—	53·41 died	—	—	—	7·4 died	—	—	—	45·0 died

TABLE IV

Blood Sugar, Urea and Amino-acid Values following Subcutaneous Injection of 4 : 4′-Diamidino-diphenoxy-pentane into Goats. (*Results in mgm./100ml.*)

Interval After Injection	Blood Sugar		Blood Aminoacids		Blood Urea	
	Goat 7	Goat 8	Goat 7	Goat 8	Goat 7	Goat 8
Injection	48·41	53·98	7·3	5·8	21·2	20·2
1 day	50·73	50·76	5·8	5·7	20·8	20·8
2 days	48·67	49·82	5·2	6·1	19·6	21·2
4 days	46·91	49·56	6·2	5·6	20·4	21·6
6 days	49·20	49·96	5·9	5·9	19·8	20·9
8 days	50·00	50·34	5·7	5·6	20·1	20·6
10 days	50·21	54·24	5·8	5·9	20·9	21·8

DISCUSSION

From these experiments it appears that 4 : 4′-diamidino 1 : 5 diphenoxy-pentane, when given in doses of 10 mgm./kilo or over to farm livestock, can produce shock (which may be fatal) at the time of intravenous injection. When given subcutaneously, painful swellings may develop but the severity of these toxic manifestations varies considerably. Animals which survive these higher levels of injection usually die after a varying interval, though a few individuals apparently remain healthy. *Post-mortem* findings also do not appear constant. Usually a flabby heart and marked venous congestion is produced, but not always. Also either or both the liver and kidneys can be injured.

It appears that with the better tolerated doses kidney damage precedes liver injury, so that the blood urea level is increased before any rise in the blood amino-acids indicates that liver function is impaired. No glycaemic changes were observed in the bloods of cattle, sheep and goats even in those cases which eventually proved fatal, where a 50 to 100 per cent. rise in blood urea had taken place. The toxicity of the drug and the deaths which follow its use in large domestic stock are not, apparently, due to disturbances produced in the host's carbohydrate metabolism.

Acknowledgments.—It is great pleasure to acknowledge our indebtedness to Mr. S. A. Evans, who initiated and provided the facilities for this work, and for his help and continued interest. Also, our thanks are due to the Director of Veterinary Services for permission to publish this work, and to Messrs. May & Baker, Ltd., for samples of this new compound.

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A swing back from the currently popular baby beef to the heavier meat animal of a decade or more ago is forecast as a result of the war. Dr. Oliver S. Williams, Vice-Dean of Agriculture at Oklahoma A. & M. College, made the prediction after studying possible effects of the American military training programme and the German counter blockade of Britain on American cattle production methods. Mess sergeants favour heavy cattle, Dr. Williams said. They find the heavy cuts of meat are more economically handled in army kitchens and that beef produced from older animals is less subject to spoiling.—*Christian Science Monitor.*

A Pastoral Policy for Britain

L. E. W. BEVAN, M.R.C.V.S.

This is not a review but a commendatory comment on projected, long-overdue reforms in the conduct of this country's premier industry. Messrs. George Allen and Unwin, Ltd., have performed a national service in publishing a pamphlet entitled "An Agricultural Policy for Britain. And a Policy for British Agriculture," written by Mr. G. Goddard Watts, who has "been planning and conducting educational propaganda for eight industries and eleven leading industrial organisations for many years." He farms in Sussex and may be taken to possess a practical as well as a theoretical knowledge of his subject. The pamphlet is a plea for educational propaganda on behalf of British Agriculture, and the contention is that "unless we begin NOW to build up an intelligent public opinion which understands the case of a prosperous rural community, British agriculture after the war will experience the same disasters as befell it after the war of 1914-18."

Means are suggested whereby farmers may develop their industries against a background of security, and also be helped to grow and market their products efficiently. Preliminary steps are indicated for bringing life back to the villages and enabling a rural civilisation to recreate itself "out of the flood of new life that will be released if we turn once more again to the soil."

In the first part of the pamphlet the argument is advanced that "the war has saved agriculture," and it is held that "we are doing the unthinkable and caring for the land again and removing from it those who abuse it and neglect it." It contends that "the State has found it possible to control the growing of every crop in practically every field," and that "the dingy yellow of neglected grass has given way to good, rich squares of burnt sienna where the plough is restoring fertility and life." "While men are working in the ditches, the hedges are being laid; beside the fields stand large stacks of land drains." All this is good news and corrects the impression which some of us had gained that much good pasture which could ill be spared had been given over to the plough, leaving the farmer short of grazing: that not only the undesirables but too many skilled workers had been removed for less specialised duties, leaving the farmer lamentably short of labour: that in many other ways the Government had rather rushed in where previously "angels feared to tread."

It was Oliver Goldsmith—whose rest has recently been so rudely disturbed—who wrote:—

> "But a bold peasantry, a country's pride,
> When once destroyed can never be supplied"

and Mr. Goddard Watts in terms almost equally poetic preaches the same gospel. He tells us how in recent years the Agricultural Industry has become decadent; how our lands have deteriorated; how our rural population has escaped the boredom and toil of the country for the attractions, the higher wages and the shorter hours of the towns. Fortunately Mr. Watts is an optimist and visualises a rural Utopia where the happy and prosperous worker may dance late and rise early—to milk the cows at 3.30 a.m. double summer time or, perhaps, a bit later on a winter's morning—may meet his neighbours "in friendly rivalry on the football field, at the darts board, or even just at a whist drive in the village hall"; and we may, perhaps with some irreverence, suggest, return when his day of toil and innocent amusement is over, to

milk his cows once more and devote his well-earned leisure to the compilation of official statistics.

Many explanations are given for the decadence of British agriculture which has resulted in our dependence upon overseas imports of food which used "to run at over £400,000,000 a year, whereas our home production of food was valued at about £250,000,000 a year." Probably we were self-supporting in respect of only about one-third of our food. This corresponds fairly closely with a recent contention, appearing in *The Veterinary Record,* that we were before the war dependent upon overseas supplies to the extent of 70 per cent., and of this some £220,000,000 worth of animal products were imported from overseas. Mr. Watts points out that "this huge bill for imported food was paid partly in the form of interest on our overseas investments, of which the marketable value before the war was in the neighbourhood of £4,000,000,000. So the rentier had a very definite interest in the importation of food rather than its production at home." But who can blame the rentier, who realised that the home producer could not supply the goods notwithstanding the fact that the fertility of British soil and the pre-eminent virtues of British stock gave him every advantage? The principal reason why the home producer was beaten in his own market was probably because the continuity of supplies of uniform standard of excellence from overseas appealed not only to the wholesalers but the retailers and the British housewives, who preferred to know what they could get and when they could get it rather than be at the mercy of the haphazard supplies of home-grown materials. These characteristics of overseas stocks were the result of foresight, organisation, Government assistance, advice and supervision, and a readiness on the part of overseas producers to learn and to co-operate: whereas in this country a progressive far-seeing agricultural policy has for political reasons been carefully avoided by Governments in the past, and the "manly independence" of our farmers has rendered them averse to scientific advice and methods and concerted effort. As Mr. Watts says, in Britain "neglect rather than exploitation has been our crime."

But Mr. Watts, being an optimist, foresees the day when, thanks to soil erosion and other destructive influences, "those countries will no longer be able to supply us" and he exhorts the British farmer: "let us put our house in order therefore, and conserve the fertility of our part of the earth's surface." True, he appears to be conscious of our limitations and indicates that if our overseas competitors fail to collapse as suddenly as they may be expected to do, we must at least "have a flourishing agriculture to provide us with *fresh* products, always the choicest items in the country's larder," that is, fresh vegetables and fruits, and, incidentally, fresh milk and fresh eggs. To this end "we must plough for grass, and plough for milk"—and since "stock, grass and corn are really three parts of one farming operation" it will be wise to maintain a certain number of stock to provide dung for corn. It is pleasing to find so much importance attached to the pastoral side of the agricultural industry—an importance which so many of our leading agricultural experts are apt to overlook.

A few years before the war, a leading agricultural writer pointed out the futility of growing so much wheat in England when an overwhelming supply of it could be grown in Canada and could be placed on the English market—where it was preferred by our bakers—at a lower price than the home-grown grain. The war in the Atlantic has stopped this supply, but as soon as the shipping routes are rendered safer, it will be resumed and once again it will render the growing of wheat in this country unnecessary. The same applies to other home-grown crops and to most of our animal products. It is only by maintaining a continuous supply of foodstuffs of equal quality and at the same prices to the consumer, that we shall be able to compete with them in our own markets. And to this end we must adopt the same scientific methods and organisation as our competitors, and must immediately commence to put our house in order. Mr. Watts' views should therefore be given serious consideration.

Thanks to the "shaking up" which this war has given us, we are to-day in a far better position to resuscitate the agricultural and pastoral industries than we have been for many years. Even the Government has been forced to abandon the *laisser-faire* attitude of its predecessors, and is "sitting up, taking a little notice." We start with the inherent advantages of exceptionally fertile soil and exceptionally fine livestock, as a foundation. And we should not confine our vision to the vegetable kingdom; we should remember that before the war £200,000,000 worth of animal products were imported from overseas to supply our needs, which means that there is a very considerable market at our door for our own produce if we can supply it on equal terms. But this cannot be done by returning to the old haphazard methods of the past. It will require far-seeing organisation by the Government and sincere co-operation between the producers. Above all we must build upon a sound foundation—that is, a foundation of good health.

Unfortunately there is at present in this country an overwhelming quantity not only of sick land but an even greater proportion of sick animals. As every veterinarian knows, our livestock are riddled and ravaged by diseases, some known to science, but many others—owing to the official neglect of Veterinary Education and Research in the past—but imperfectly understood and therefore impossible to control. The losses due to the four major diseases of cattle alone, mastitis, contagious abortion, sterility and Johne's disease, are estimated at £14,000,000 a year. This estimate is far too modest. If all the diseases of all the other species of domestic stock on our farms were taken into account, it can safely be assumed that the direct and indirect losses would exceed £50,000,000 a year—a serious legacy from the past, and a severe handicap for the future. The labours of Hercules in his attempt to cleanse the Augean stables were as nothing compared with those confronting our State Veterinary Department.

Weekly Wisdom

Much of our misunderstanding of the viewpoint of other ages is due to some shifting in the significance of the symbol . . . becomes worn like a coin . . . so long in circulation . . . all its inscription is lost.—From "Thus we are Men."—Sir W. Langdon-Browne, M.D.

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Sir Robert Dummett at Bow Street Police Court said recently that leaving an Alsatian dog by itself in a motor-car was not sufficient to render the car immobilised. A defendant had pleaded that he defied anyone to try to enter his car when the dog was in it.

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Membership of the Hackney Horse Society now stands at 226. The Society has investments of £1,638, and the last year's accounts show a balance of expenditure over income of £132.

CLINICAL COMMUNICATION

Excision of the Soft Palate

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Subject.—Three-year-old Labrador-Spaniel dog.

History.—In June, 1940, the dog became, on occasion, a bit " off-colour " with sickness and softish faeces. As gastritis had twice been diagnosed elsewhere when similar symptoms had been shown, the owner put it down to the same trouble. After 14 days, paralysis of the hind legs occurred and we were consulted.

Diagnosis.—Canine distemper.

Examination and Symptoms.—The paraplegia and the digestive symptoms turned out to be transient only and were soon resolved. The temperature wavered between 102 and 103·5 throughout, the pulse remaining correspondingly accelerated and rather weak in the later acute stage. After a week of apparent recovery, the paraplegia recurred, and respiratory symptoms started, manifested by a purulent nasal and ocular discharge; vomiting reappeared in a persistent and repeated form, immediately after all food and fluids. The patient was in this critical state for three days. The throat region was somewhat inflamed, and the laboured and jerky breathing suggested a severe pulmonary congestion. At this stage there was some constipation.

These acute symptoms slowly subsided, the paraplegia passing off in about a month. There remained, however, the very distressed breathing, displayed by stertorous, laboured inspirations and expirations, after every few dozen of which the dog opened his mouth wide and made a spluttering, retching sound, as if there were some obstruction in the throat. During each expiration, the cheeks puffed out in a clear-cut, definite manner. Meanwhile, the appetite was ravenous; indeed, it was so all along, except in the very acute stage. The most characteristic feature of all was the dog's inability to drink liquids owing partially to excessive salivation and partially to flaccidity of the swallowing muscles; on placing a bowl of water before the dog, he would lap hard for five minutes, after which time the bowl would be rather fuller than at the start of the process, due to the dropping of clear muco-serous discharge from the mouth. This state of affairs lasted for about three months, before the owner decided it could go on no longer.

Treatment.—In the early stages, the usual treatment for distemper was adopted, consisting of warmth, nutritious spoon-feeding, laxatives, stimulants, steaming the nasal passages, cleansing the eyes and nose, and fixing a jacket over the chest.

For the paraplegia, two series of five injections of Aricyl (Bayer's) 1 c.c. daily, with a week's interval between each, appeared to be of benefit. Then to check the copious salivation, 10 m. doses of tinct. hyoscami *t.i.d.* proved of definite but intermittent value. Later on, 10 c.c. bronchisepticus serum subcutaneously gave temporary alleviation. The obstructive, salivary breathing always tended to reappear, however, and emaciation got progressively more pronounced.

On January 18th, 1941, the dog was again examined, and destruction considered, if no further relief was thought possible. However, on looking down the throat, the pharyngeal, palatine and tonsillar areas still looked reddened and flaccid from lack of tone. It was decided, as a last resort, to excise the soft palate and so remove the chief obstruction to the passage of air to the lungs.

Operation.—This procedure was not exactly difficult. The instruments were boiled and nembutal given intravenously. The animal's mouth was held open, the free edge of the soft palate seized with whelping forceps, and a piece as large as a sixpence snipped off with curved scissors. Bleeding was profuse for a time but stopped altogether after a few hours. No attempt was made to check it, the dog's head being hung over the side of the operating table to enable the blood to drain away by gravity, and then the dog was propped up on two cushions with his head sloping downwards to the floor.

The animal went home the next day and, apparently, was quite normal on coming round from the anaesthetic. No after-effects of the operation were seen and there was no recurrence of the old trouble. He rapidly put on flesh and is now in fine condition.

Discussion.—This record is not written on account of the intricacy or technique of the operation but rather by reason of its simplicity, and owing to the paucity of literature on the subject. The efficacy of the procedure in the dyspnoea–hypersalivation–inability to drink syndrome is indicated. The exact lesion causing this combination of symptoms is not clear, but, presumably, it is due to the upset of the sympathetic-parasympathetic balance, causing increased glandular secretion and decreased muscular tone, and is therefore sharply differentiated from the more common complications of distemper, such as chorea and fits, in which affections the pathological changes lie principally in the brain and spinal cord.

SCIENTIFIC POULTRY BREEDERS

Lord Woolton, Food Minister, recently met representatives of the Scientific Poultry Breeders' Association, when they submitted the case for increased prices to egg producers to make it possible for the industry to carry on. The question of the importation of poultry feeding-stuffs instead of eggs was also discussed. The representatives dissociated themselves from any threats to influence poultry keepers, in this time of national crisis, to contravene the law by ignoring existing orders issued by the Government. They assured Lord Woolton that they would urge their members, despite all difficulties, to produce all the eggs they could. " The public will get their eggs."

Lord Woolton indicated that " he did not intend to accede in any way to the threats of a certain section of poultry keepers," and in view of the fair way in which the Association had put the case for the industry he would give the points raised his closest consideration.

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Major G. Lloyd George, in a written reply to a question on June 26th, stated that the approximate number of persons now benefiting under the National Milk Scheme is 3,050,000. The annual cost of the scheme to the Exchequer, he added, is £13,500,000, including approximately £600,000 for administrative expenses.

ABSTRACTS

[THE CURATIVE EFFECT OF STALE BREAD IN ENTERITIS OF SWINE. Hixson, R. W. (1940.) *J. Amer. vet. med. Ass.* **97**. 584.]

The author considers that the various types of bacteria isolated from cases of enteritis of swine are but secondary factors in the causation of this disease. He maintains that the condition is caused by malnutrition and advances the hypothesis that it may be due to deficiency of vitamin B_1 or B_2. Hixson describes experiments in which six groups of pigs suffering from enteritis are fed differing diets. The experimental rations as offered to the control all contained 40 per cent. stale bread. He concluded from the results obtained that stale bread was definitely of value as a curative measure and that it had also the merit of a pulpy and easily digested food which was a good vehicle for carrying the necessary alkaline solutions to the intestines.

J. S.

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[THE PRESENCE OF A VIABLE NOCTUID LARVA (*ANTITYPE FLAVICINCTA* F.) IN THE SUBCUTANEOUS TISSUES OF A DOG. Worden, A. N. (1941.) *Entomologist's Monthly Magazine.* 1941 (April). No. 77. 94-95.

Worden records that a living Noctuid caterpillar was obtained from a subcutaneous swelling in the region of the left thyroid cartilage of a nine-years-old Airedale terrier bitch after the affected site had been bathed and compressed. The larva subsequently pupated and was identified as the Large Ranunculus, *Antitype* (or *Polia*) *flavicincta* Fab., and the author considers the occurrence as presumably an accidental one in which the larva was able to survive for a surprisingly long period.

J. N. O.

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[THE ARTIFICIAL FEEDING OF HORSES. Bolz. (1940.) *Tierärztl. Rdsch.* **46**. 489-491.]

Horses require to be fed artificially when they are unable to feed normally, *e.g.*, when affected with fractures, painful suppurative conditions about the jaws and mouth, or with local paralysis, tetanus, etc.

Rectal feeding and intravenous feeding with sugars are unsatisfactory except for very short periods; the author has therefore evolved the following method, which has given excellent results.

A stomach tube of ordinary calibre is used and the food is minced and then pumped through the tube by means of a sausage-filling machine, worked by a handle. Many kinds of food can be used—roots, greens, corn, fruit, etc. The above apparatus reduces it all to very small fragments so that it will pass easily through a stomach tube in a watery mass to which has been added—and this is the important point for success—a mucilaginous and swelling compound sold under the name of "Viskogela." [This is defined as a "hemicellulose" by the makers, the chemical firm Marienfelde; it is sold as an obstetric lubricant and, as such, contains 5 per cent. active chlorine.] Horses are fed twice daily, each time with six litres of the food mixture, the stuff being given in "mouthfuls" with a pause between each. Horses so treated quickly regained condition, and it was observed that they regained a good appetite after a few such meals, whilst similar horses were much slower in doing so when not artificially fed.

Linseed mucilage was found to be far inferior to "Viskogela" as a lubricant for the food.

J. E.

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[FAILURE OF AN ACUTE INFLAMMATORY PROCESS TO EXTEND INTO AREA PREVIOUSLY INJECTED WITH INDIA INK. Avery, R. C., and Rigdon, R. H. (1939.) *Proc. Soc. Exp. Med. Biol.* **42**. 67-69. (2 figs., 3 refs.).]

The study of the spread of an acute inflammatory process into the site of a chronic inflammatory reaction has been made possible by the intradermal injection of India ink followed by the injection of pneumococci into the adjacent skin. It is found that 24 hours after injection of the ink there is slight hyperaemia, oedema, and leucocytic infiltration. The action subsides slowly, and disappears after about one month. From the site of inoculation of the pneumococci diffuse oedema, hyperaemia, and infection spread. The skin injected with ink, however, does not permit passage of either infection or inflammatory processes. The degree of limitation increases with the time which elapses between the injection of the ink and the organisms. The process is explained by scarring, plugging of the lymphatics with carbon particles, and accumulation of carbon in the tissue spaces. Similar results were obtained when trypan blue in dilutions of 1 : 50 to 1 : 500 was substituted for India ink.

D. D. O.

AUSTRALIAN FARM HORSE ENCOURAGEMENT

With a view to encouraging the use of horses on Australian farms the Commonwealth Clydesdale Horse Society has arranged to hold "horse-grown" wheat crop competitions, in conjunction with the district wheat competitions conducted annually by the Department of Agriculture. In order to qualify for the "horse-grown" competitions, the crops must be produced exclusively by horse power which includes all operations connected with the preparation of the soil, the sowing of the crop, and subsequent operations up to the time of judging. These competitions are to be held in six districts of South Australia. Some of the Australian state governments are also giving encouragement to horse breeding. The South Australian Minister of Agriculture has agreed to grant subsidies to stallion owners in six districts of the State up to a maximum of £40 for each stallion not under four years old; and the Government of Victoria, to encourage draught horse breeding, has agreed to offer a bonus of £2 on every foal by registered Clydesdale stallions from a draught mare approved by the officers of the Department. In announcing this foal bonus, the Prime Minister of Victoria said it was regrettable that the horse-breeding industry had been so neglected in recent years. Too many farmers had taken to mechanical power when horses would have been more economical on small farms. This is the first occasion on which Government financial schemes to encourage horse breeding have been found necessary in Australia. While the Commonwealth Clydesdale Horse Society approves of the action taken by the Victoria Government, it regrets that such a policy should have become necessary. Had some practical action been taken four or five years ago, states the Society in the latest issue of its *Monthly News*, the drift in horse breeding and usage could have been prevented, whilst at the same time the tremendous outlay made in the introduction of tractors on farms could have been obviated.—*Scottish Farmer.*

Victoria Veterinary Benevolent Fund

ANNUAL GENERAL MEETING

The Annual General Meeting of the members of the Victoria Veterinary Benevolent Fund was held at the Royal Station Hotel, York, on Friday, June 20th, with Mr. G. P. Male, Vice-President, in the chair in the absence of the President, Lieut.-Colonel J. W. Brittlebank, who was unable to attend.

There were also present: Mr. W. Andrew, Professors J. F. Craig, T. Dalling, Messrs. G. W. Dunkin, C. Harvey, J. Holroyd, W. W. Lang, G. H. Livesey, J. W. McIntosh, Professor W. C. Miller, Messrs. T. M. Mitchell, W. Nairn, J. O. Powley, A. Spicer, H. W. Steele-Bodger, W. K. Townson, Dr. A. W. Whitehouse, Professor G. H. Wooldridge and Dr. W. R. Wooldridge.

The Secretary read the notice convening the meeting, and announced that letters of apology for non-attendance had been received from the President, Lieut.-Colonel J. W. Brittlebank, and from Professor Buxton, Professor Browne, Sir John Kelland, Colonel W. S. Mulvey and Mr. T. Wilson.

The minutes of the previous annual meeting, having been published, were taken as read and signed as correct.

Election of Officers

The Chairman said that the first item on the Agenda was the election of the President. As they knew, Lieut.-Colonel Brittlebank had occupied this position for many years. He had taken the deepest interest in the Fund and he would like, from the chair, to propose his re-election.

Mr. H. W. Dawes seconded, observing that those who had been associated with Colonel Brittlebank in the work of the Fund knew how very dear to his heart it was. His personal knowledge of so many of the cases which came to the notice of the Fund was invaluable in deciding about relief.

There were no other nominations, and the motion was carried unanimously.

Mr. Holroyd moved that the four Vice-Presidents, Professor Buxton, Messrs. Male, Rider and Professor Wooldridge, be re-elected. Mr. Nairn seconded and the motion was carried.

On the motion of the Chairman, seconded by Mr. McIntosh, Mr. Arnold Spicer was unanimously re-elected Treasurer.

On the item Election of Honorary Secretary, the Chairman said that Colonel Simpson, who was prevented from attending the meeting owing to pressure of civil defence duties, had been a very great help to the Fund, and was thoroughly conversant with its work.

Professor Wooldridge proposed the re-election of Colonel Simpson as Honorary Secretary, and endorsed all that the Chairman had said about him and his work for the Fund.

Mr. McIntosh seconded and the motion was carried.

Messrs. Wilkinson, Chater & Co., were re-elected Auditors.

Annual Report and Balance Sheet

The Chairman remarked that the Annual Report, which had been circulated to all subscribing members of the Fund, contained some very interesting matter, and he hoped all the members had read it. He would like to see a longer list of Life Members.

Mr. H. W. Dawes said he would like to place on record the excellent work done for the Fund by the present President of the National Veterinary Medical Association, Mr. Steele-Bodger. Mr. Steele-Bodger, wherever veterinary surgeons were gathered together, had always made an appeal for the Benevolent Funds.

The Secretary pointed out that the figures given in the report on the result of the appeal made by Mr. Steele-Bodger referred to the period ended on December 31st, and that they did not in consequence represent all that had resulted from Mr. Steele-Bodger's efforts. From a recent report appearing in *The Veterinary Record* it was now known that up to date the sum of £962 11s. 6d. had been received in response to the appeal. The total figures would of course appear in the next Annual Report of the Fund.

The Chairman said that they were very greatly indebted to the President and the other Officers of the N.V.M.A.; also to the members of the Divisions throughout the country who had subscribed most generously. He felt that they owed a deep debt of gratitude to Mr. Steele-Bodger.

Mr. Dawes moved that a cordial vote of thanks be accorded to Mr. Steele-Bodger. This was seconded in many places and carried with acclamation.

Mr. Steele-Bodger said that, frankly, such a vote was redundant so far as he personally was concerned, but so far as the Officers of the Association were concerned it was merited. No tribute which he could pay would be too high to the members of the profession, many of whom had had a very lean time, yet had given an almost unbelievable response to the appeal. He mentioned that the smallest Division, the Derbyshire, which had only 20 guineas in reserve, yet voted £20 at their last annual meeting, and also contributed an average of 30s. per member. The Eastern Counties Division had also contributed over £1 per member, and the Lancashire Division had contributed the large sum of £150. The Central Society had voted £100, and an appeal was being made to their members. From all quarters money was coming in. This was one of the unexpected benefits of the work of the Survey Committee, for these special meetings had enabled appeals to be made for the Fund. He hoped the next year would be as successful. Owing to the generosity of Mr. Nairn they still had a good deal to come in from the gold watch competition. He was not certain of the amount, but he thought he was right in saying it was £50 in hand, and there were still hundreds of tickets to come in.

The discussion on the Report was then resumed and the Chairman remarked that they would see that there were fewer applications for relief, and that the diminution in ordinary subscriptions had not been so great as might have been expected. This was very satisfactory for the second year of the war. They hoped it would continue, but he was rather afraid some of the members might want some relief from the Fund. The Chairman also referred to the legacy left by Captain Villar, and Mr. White's ingenious idea of getting rid of their medals for the benefit of the Fund. The Council was very greatly indebted to the National Veterinary Medical Association for the vote of £1,000 to form a Fund for members adversely affected by the war.

Mr. McIntosh moved a special vote of thanks to Mrs. Male the President, to Miss Wragg the Secretary, and to the members of the Ladies' Guild and the

Northern Ladies' Committee for the work they had done during the year.

Professor WOOLDRIDGE seconded, and commended the idea of devoting the winnings at small private card parties to the Fund.

Mr. STEELE-BODGER supported this idea and suggested that a collecting box might well be carried by members who gave lifts in their cars to people, whom he was sure would gladly drop a sixpence into the collecting box.

The motion of Mr. McIntosh was carried.

Mr. MCINTOSH then moved that the Report and Statement of Accounts be received and adopted. This was seconded by Mr. HOLROYD and carried unanimously.

Council Election.—On the motion of Professor WOOLDRIDGE, seconded by Mr. NAIRN, the following members of the Fund were elected to the Council: Major F. Leeds Gooch, Messrs. G. H. Locke, A. Mackenzie, Mrs. M. Nickinson, Professor T. G. Browne, Mr. Wm. Woods, Mr. and Mrs. W. G. Wragg, Messrs. J. Holroyd and H. W. Steele-Bodger.

The Secretary was instructed to write to Professor O'Connor thanking him for the interest he had displayed in the Fund as a Member of Council, and expressing the confidence of the meeting that he would continue that interest.

Mr. STEELE-BODGER inquired how many applications had been received for help from the special Fund created by the gift of the National Veterinary Medical Association.

The SECRETARY said that only one application had been considered so far. This was from a member who had had his house and surgery bombed, and was himself injured. The case had been dealt with by the Joint Committee and a grant of £100 had been made. This had been received with very great gratitude by the member, who said it would help him to get on to his feet again.

Mr. HOLROYD moved a vote of thanks to Mr. Male for his conduct of the meeting, which was heartily accorded.

The CHAIRMAN, in returning thanks for the vote, said he would like once more to thank the generous donors of special donations, legacies, and others for the help they had given to the Fund. He was sure the recipients were most grateful for the help given, which was so sorely needed.

SUSPECTED DEATHS FROM COCA-BEAN FEED

On professional advice, Cheshire War Agricultural Executive Committee has issued a warning to all farmers concerning the use of coca-bean foodstuffs for stock and poultry. Cattle fed this material in meal, cake or extract form, have suddenly died. Three cases have been reported from Cheshire and four from Lancashire. Cows have gradually become ill within a fortnight of having their first meal, but sheep and poultry have died quickly after receiving ¼ lb. as part of their daily ration over 14 days.

An official of the committee told the *Manchester Evening News* recently, "The delayed action of the poison averted suspicion and it was not until veterinary surgeons examined carcases that we learned of the deadly effect of the poison contained in the beans.

"All farmers are being warned against using coca-beans, but they have not been generally used, fortunately, because their introduction was only a war-time measure by some farmers to meet shortages of usual feeding-stuffs."

IN PARLIAMENT

Colonial Development and Welfare

In the House of Lords on Wednesday of last week, in reply to the Earl of Listowel, who asked the Government, in view of public statements recently made by the Secretary of State for the Colonies, what steps they were now taking to implement the provisions of the Colonial Development and Welfare Act, Lord MOYNE made a statement on war and post-war development in the Colonies. He said that the war had been very uneven in its effects on different parts of the Colonial Empire. To a fortunate few whose products had been in demand and had fetched high prices it had brought abounding prosperity—to Malaya and to Northern Rhodesia especially. Other Colonies had not fared so well. Some, such as Malta and Cyprus, were cut off from their ordinary trade by their geographical position. In some cases it had been necessary for the United Kingdom Government to come to their assistance. In general, embarrassment was now more likely to be caused in the Colonies, not by lack of money, but by the shortage of imports on which to spend it. We had to guard against the danger of inflation in the Colonies by much the same methods as were familiar here.

The war had affected the degree to which it had been possible to carry out the long-term policy under the Colonial Development and Welfare Act. It had increased the number of emergency grants to keep Colonial Governments going, but it had reduced the possibility of carrying out development work. At the time of his death, Lord Lloyd had come to the conclusion that some further encouragement should be given to Colonial Governments to submit schemes under the Act, but he had not had time to give effect to this intention. He (Lord Moyne) was in cordial agreement with that view. At the same time, it was becoming increasingly obvious that demands from the Colonies for supplies from this country and the American Continent must be reduced to essentials, and he thought it desirable to review the whole policy which Colonial Governments should be invited to pursue, having regard to these two opposing considerations.

He had discussed these questions in a long dispatch sent a few weeks ago to Colonial Governors, in which he had dealt first with the need of limiting personal consumption of imported goods, pointing out the need of saving shipping space, foreign exchange, and productive capacity. The Colonies were asked to achieve these purposes by control of non-essential imports, by taxation to limit spending power, and by war savings. As an example of the attention which was being given to this, the West Indian group of Colonies were arranging to hold a conference shortly under the chairmanship of Sir Frank Stockdale, to concert a common policy in import control.

In the past some Colonial Governments had been so generous as to offer their surpluses as gifts to his Majesty's Government for the prosecution of the war. We had accepted these gifts gratefully, but with a certain doubt whether we were morally right to do so. It was not proper that the poorer Colonies should be permanently deprived by their generosity of the opportunity of building up reserves that they might sorely need in the future. Accordingly, what he had now proposed was that if they had surpluses available for the time being, those surpluses should be lent to his Majesty's Government without charge for the duration of the war, with the intention that they should be repaid when required by the Colony concerned for post-war development. This would not prevent outright gifts by those more fortunate Colonies which could feel assured that they possessed adequate resources without any further accumulation of reserves.

THE STANDARD OF LIVING

In regard to the other side of the dual policy—the obligation to raise as far as possible the standard of life of all those classes in the Colonial Empire whose standard

was at present below an adequate minimum—it was important to plan ahead, so that when normal conditions returned schemes aimed at a permanent improvement in standards of living could at once be put into operation. He had urged Colonial Governments to do their best to frame plans for the future, and meanwhile not to be afraid of submitting schemes for assistance which did not involve imported material or personnel. Colonies could be assured that if they could put up good schemes which did not interfere with the war effort, the money to finance them would be forthcoming.

The Government had under the new Act approved about 24 schemes, involving a total expenditure over a period of years of about £380,000. Thirty-four more schemes were being considered, involving a total expenditure of about £800,000, and at least 70 other schemes were coming along. The great majority of the new proposals were the result of the work of the Comptroller of Development and Welfare in the West Indies, Sir Frank Stockdale.

The prosperity and the future of the Colonies must be profoundly affected by the changes brought by the war, and much thought and wise leadership would be required. For this purpose we must keep up and strengthen the efficiency of our Colonial Services. Even during the war, therefore, after consultation with the military authorities, the Government were keeping up a measure of recruitment for the administrative, agricultural, legal, medical, and other technical branches so that there should be no gap in the structure of the Colonial Service when the men who had been retained over age and for other reasons were released at the end of hostilities.

He had also set up within the Colonial Office a small official committee to prepare the ground for the decisions which would be needed to plan Colonial economics under the new conditions after the war, and to collect the facts that would help them to deal with the many other post-war problems that would arise. They were fortunate in having secured as Chairman Lord Hailey, who since his great African Survey had carried out two other inquiries in connection with our African Colonies and their relations with those of Belgium and Free France. The committee was primarily a preliminary fact-finding body. It was working in close touch with various outside non-official organisations, which were in a position to assist it in its inquiries.

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Pharmacy and Medicines Bill

In the House of Commons on July 8th, Mr. E. Brown, Minister of Health, moving the second reading of the Pharmacy and Medicines Bill, stated that the Bill repealed the Medicine Stamp Duty and the Licence Duty, in accordance with a promise given by the Chancellor of the Exchequer last April. The Stamp Duty yielded about £800,000 and the Licence Duty about £40,000. The tax had become difficult to collect, if not unworkable. There were many exceptions, the main one being that only medicines in which proprietary rights were claimed were dutiable.

The proposition that medicines were a suitable subject for tax and that a fair *ad valorem* duty would be 16⅔ per cent. had been followed out to the extent that the Government had applied the Purchase Tax to medicines. The yield on that rate was estimated at about £3,000,000 a year, or nearly four times the present annual yield of the Medicine Duties.

In debate, Mr. J. Griffiths said he strongly supported the clause prohibiting the advertisement of alleged cures for certain diseases. There was nothing worse than the exploitation of the fears and hopes of poor people who were ill. (Hear, hear.) The Government appeared to be too tender to the big proprietary trusts. The only way to prevent the exploitation of the poor was to provide a real State medical service.

Mr. Beverley Baxter, speaking as a member of the 1937 committee, said that although the Bill looked very innocent and constructive, there was in it a tendency to place monopoly powers in the hands of the British Medical Association. There was a tendency to ban things too much: he would rather have a system of inquiry and judgment on the efficacy of remedies. The Bill should not be rushed through in its present form.

Frauds on the Public

Rear-Admiral Beamish said he was glad that at last some control was to be exercised over those quacks who had for far too long perpetrated their frauds on the public, and other members expressed the view that the Bill did not go far enough in the matter of controlling undesirable advertisements.

Sir E. Graham-Little supported the Bill but regretted that so little was proposed to be done by it. One reason for the immense increase in the use of medicines was the power of the Press. The proposals for restricting advertisements of medicines did not go far enough.

Sir I. Fraser said that attention had been drawn by a note in a journal that morning which said that this was hasty legislation of a kind to be deplored in war-time. The leader writer who allowed himself to express that view must have read the documents hastily. They went back to 1914 and far before that, and these present proposals were carrying out all the recommendations of the Select Committee of 1936. The matter had been fully discussed in the House of Commons three times, and sufficient time had passed to be sure that every point of view had been put forward. The Bill commanded a very fair degree of unanimity in the House and outside, it ended a long controversy, and would enable them to get on with more urgent business.

Sir F. Fremantle said it was ridiculous to describe this Bill as hasty legislation. It was the most maturely considered Bill he could remember. It did not go far enough, because it did not compel disclosures of quantity of the component parts of preparations. He regretted that surgical appliances were not included. The Bill would help the promotion of truth in the application and use of medicines.

Miss Horsbrugh, Parliamentary Secretary to the Ministry of Health, replying to the debate, said that there was no truth in the suggestion that this Bill prejudiced the little man as compared with his bigger competitor. The measure did not profess to deal with advertisements as a whole, but only certain classes of advertisements. She believed that the fact that the ingredients of the remedy had to be disclosed would in many cases stop what might be a ramp.

The Bill was read a second time and committed to a committee of the whole House.

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The following are among the questions and answers recorded in the House of Commons recently:—

Poultry Keeping (Stock)

Mr. Hannah asked the Minister of Agriculture whether he realises the loss suffered by novices in poultry keeping caused by dealers who, chiefly in markets, are selling day-old chicks, a good percentage of which are almost in a dying condition through neglect; and will he take steps to stop this very unsatisfactory state of affairs?

Mr. Hudson: Yes, Sir. This was one of the main reasons for setting up the Domestic Poultry Keepers' Council last September. They have advised poultry keepers to get their stock from actual breeders: this advice is being widely circulated through the area organisation of the council. I shall be glad to be notified of any specific cases of the kind referred to by my hon. Friend, so that I may use the powers I possess to deal with them under the Diseases of Animals Acts, 1894 to 1935.

Dairy cattle these days don't need to be attested to make high prices. At Paisley recently crossbred calved cows were sold at £66, £60 10s. and £59, while Ayrshires made up to **£58.—*Scottish Farmer.***

ROYAL COLLEGE OF VETERINARY SURGEONS

Membership Examinations (July, 1941)

LIST OF SUCCESSFUL CANDIDATES

Glasgow

FIRST YEAR:

Aird, J. S. (C)
Anderson, A. W.
Barr, W. B.
Black, A. M.
*Brown, John
*Burns, John
Campbell, Donald
Dunn, A. M.
Evans, L. A.
Flynn, J. A.
Galbraith, Miss M.
Hyan, Richard (B)
Lapraik, R. D. (C)
Lobban, Miss M. C. C. (B)
Macdonald, Andrew
McDonald, D. K. (C)
*McGregor, J. L.
McKenzie, Alex. (C)
Mackenzie, Miss C.
*Mackenzie, Miss J.
Marshall, Thomas
Murdoch, W. A.
Provan, J. W.
Smith, A. N.
Sullivan, Jerome
Watters, Charles
Wilson, Andrew (C)
Wilson, Miss J. M. (B)

* Denotes second class Honours.
(C) Denotes credit in Chemistry.
(B) Denotes credit in Biology.

THIRD YEAR:

Brown, A. C. L. (A)
Bryson, R. W. (P) (A)
Buchanan, W. G. (A)
Buntain, D. (A)
Campbell, Miss D. G.
Clow, D. G. (A)
Cooper, Miss M. B. (P) (A)
Craig, John
Dewar, H. D. (A)
Duncan, T. H.
Fraser, J. R. (A)
Gaston, Miss D. A.
Loughlin, J.
Mackenzie, G. J.
Maclelland, Miss R.
McMillan, W. P.
McVinnie, A. J.
Munro, D. W. J.
Noble, N. M.
Normand, Miss J. G.
Pfob, L. S.
Rankin, W. L.
*Serth, G. W.
Stewart, W. M. (P) (A)
Traub, L. D.
White, Miss P. M. (A)
*Wilson, R. M.

* Denotes second class Honours.
(P) Denotes credit in Pharmacology.
(A) Denotes credit in Anatomy.

London

FIRST YEAR:

Allpress, S. G. (B)
Barber, Miss E. (B)
*Biggers, J. D.
Bligh, P. S.
Braham, R. W. J.
Briggs, C. A. E.
Brooks, W. E. J.
Chapman, R. J.
Cooper, C. T.
Davies, Peter
Daykin, P. W.
Drake, J. C. (B)
Fawcett, J. F. (B)
Furniss, R. H. (B)
*Gibson, E. A.
Gledhill, K. C.
Gover, R. W. M. (B)
King, A. S.
Levett, P. D. B. (B)
Massy, Miss R. V.
Philcox, R. A.
Rogers, M. J. H.
Russell, E. W.
Self, A. D.
Stables, J. W.
Taylor, E. E.
Thomas, E. A. (B)
†Woodroffe, G. E.
Warde, J. D.

† Denotes first class Honours.
* Denotes second class Honours.
(B) Denotes credit in Biology.

SECOND YEAR:

Ali, S. M.
Aspinall, K. W.
Bateman, H. N. (H)
Beveridge, C. G. L.
Bowditch, E. B.
Bowen, J. W.
*Brown, P. L.
Burdin, M. L.
Burke, N. F. S.
Callear, J. F. F. (P)
Dalton, P. J.
Early, J. L.
Epps, Miss E. M. (H)
Fawbert, Miss Doreen
*Fitzpatrick, R. J.
Fry, F. C.
George, I. G.
Gilbert, G. H. (H)
Grater, G. S. (P)
Keene, D. P. (P)
Knowles, J. R.
Narayan, P. H.
†Plowright, Walter
*Rowe, J. F. W.
Sambrook, P. M. F. (P)
Smith, E. K.
Underwood, D. B.
Wellington, John (P)
*Williams, E. I.
Wilson, F. A.
Wilson, J. P.
Wood, J. G. P. (H)

† Denotes first class Honours.
* Denotes second class Honours.
(P) Denotes credit in Physiology, etc.
(H) Denotes credit in Histology, etc.

THIRD YEAR:

Adams, Miss M. A. (P) (A)
*Ahmad, S. M.
*Alexander, F. C.
Blunt, M. H.
Builder, Peter
Chaudhary, S. A.
Crabtree, G. E. (A)
*Davies, D. G. E.
Day, K. S. J. (A)
Ellis, T. H.
Franklin, R. D.
Griffiths, W. R. (A)
Groves, T. W.
Hawkins, J. D.
Hayward, A. H. S. (A)
*Herbert, T. G. G.
Ingram, Miss E. D. M. (A)
Kelsey, F. H. (A)
Laker, H. T. C.
Linzell, J. L. (P) (A)
Macadam, Ian
Matthews, A. C.
Moore, T. D.
Morgan, J. B. D.
Mortimer, D. T.
Newsholme, C. M. (P)
Pierson, Eric (P) (A)
Reed, S. R.
*Roper, R. A.
Rust, Miss B. B.
Shollick, Miss G. W. (P)
Shorter, D. R.
Stephenson, Miss D.
Sykes, P. E.
Tyler, Miss A. I. (H)
Walker, D. A. W. (A)
Ward, V. C.
Williams, D. H. (P) (H)
*Woodget, Miss P. J.

* Denotes second class Honours.
(P) Denotes credit in Pharmacology.
(A) Denotes credit in Anatomy.
(H) Denotes credit in Hygiene.

FOURTH YEAR:

Arnold, R. M.
Balankura, N. K.
Birkett, Mrs. B. G.
Bowen, P. D. G. (Path)
Brain, P. G. P.
*Bullen, J. J.
Clark, Miss C. L.
Cooke, C. D. (Path)
Gorsan, Miss M. I.
Dyke, Miss Barbara
Eastwood, Richard
Edwards, F. B. (Paras)
Field, H. I. (Path)
Fincham, I. H.
*Fletcher, F. K.
French, T. H.
Frost, H. H.
Gates, H. S.
Gibbs, W. A.
*Grieve, Miss C. G.
Heeley, D. M.
Howson, Miss G. R.
Kendall, S. B.
Knight, R. W. J.
*Landau, Michael
Leach, T. M.
Luke, W. S.
Martem, D. W.
Morgan, T. J.
Nye, S. S.
Ogle, R. G.
Pybus, J. S.
Rickard, S. C.
Robins, J. H.
*Scott-Elliott, Miss A. M.
Smith, G. J. E. (Paras)
Stones, L. C.
Taylor, A. M.
*Thorne, A. L. C.
Trump, H. L. (Path)
Vaughan, A. W.
Weitz, Bernard
Welch, A. G.
Welch, Miss R.
Westcott, E. J.
Williamson, T. F.

* Denotes second class Honours.
(Path) Denotes credit in Pathology.
(Paras) Denotes credit in Parasitology.

FINAL EXAMINATION:

Bhal, P. N.
Bhardwaj, V. R.
Blaikley, George
Blair-Fish, P. R.
Butcher, Brian
Buxton, Anthony
Byles, Miss M. D.
Chandra, Brij
Chaudhari, C. P.
Cucka, Alfred (*)
Davies, W. G.
Dobinson, Joseph
Dyke, John
Fletcher, J. C.
Ford, R. W. (*)
Foster, A. V. B.
Hindle, J. J. R.
Jordan, F. T. W.
Juneja, G. C.
Kirkwood, A. K.
Lake, D. P.
Lall, Harkrishan
Levi, M. L. (*)
Lewis, E. F.
Macgregor, D. E. (S)
Mares, R. G.
Markham, A. E. G.
Mastin, V. L.
Morrison, A. M.
Morrison, J. M.
Newhook, J. C.
Phillips, R. N.
Pierce, A. E.
Pritchard, R. W.
Rawlinson, W. E.
Reynolds, Miss P. M.
Scott, D. J. P.
Sheriff, Duncan
Sindrey, R. J.
Smith, H. W.
Stainton, Miss S.
Threlkeld, Thomas
True, A. J.
Turner, A. L. (Edinburgh student)
Weatherhead, G. C.
Wickens, J. T.
Williamson, G. T.

(S) Denotes credit in Surgery.
(*) By-law 95 candidates.

Edinburgh

FIRST YEAR:

Archer, Dennis (Liverpool student) (B)
Arnot, C. A. M.
*Baillie, J. R.
Banks, P. N.
Barton, A. J.
Beynon, R. S.
Black, T. S. M. (B)
*Blamire, R. V.
*Bridge, P. S.
Brown, D. A.
Dudgeon, Alexander
*Duncan, George
*Fairclough, R. R.
*Grant, D. L.
Gray, G. M.
Handy, D. E.
Hanscomb, Raymond (B)
†Harding, H. P.
* Hill, R. L.
Hetherton, C.
Low, R. J.
McCartney, W. D. J.
McNair, M. P. B.
Overton, G. C. (Liverpool student)
Preston, P. T. (B)
Radley, G. A. H.
Sharman, G. A. M.
Steven, H. J. (C)
Wallace, R. J. L. (C)

† Denotes first class honours.
* Denotes second class honours.
(C) Denotes credit in Chemistry.
(B) Denotes credit in Biology.

SECOND YEAR:

Clarke, A. J.
Cowie, R. S.
Davie, John
†Duncan, L. J. P.
Edgar, James
Ferguson, G. S. (P)
Field, John
Geary, T. C. (H)
Gibson, T. McC. (P)
Gunstone, J. W.
Jobling, Richard (P)
Latimer, G. E. M. (P)
Letham, John (P)
Mackellar, J. C.
MacLennan, K. J. R. (P)
Macpherson, G. I.
Moody, F. C. (P)
Murray, M. D.
Nisbet, D. I.
Porteous, A. J.
Potter, Robert
Rees, L. F. (P)
Salisbury, Norman
Snodgrass, Nigel
Stephenson, F. D.
Stewart, James
Stirling, John (P)
*Thomas, P. D. I.
Vickers, T. A.
Walker, J. A. G.
Wood, James

† Denotes first class honours.
* Denotes second class honours.
(P) Denotes credit in Physiology, etc.
(H) Denotes credit in Histology, etc.

THIRD YEAR:

Barrow, D. B. V.
Beattie, I. S. (A)
Bell, R. L. (A)
Bruce, William

SECOND YEAR:

Cameron, J. A. (H)
*Coombs, R. R. A.
Coveney, P. V.
Dawson, F. T. L. M.
Donald, D. E. (A)
Ellse, J. B.
*Garside, Peter
Geary, John (A)
Girvan, R. F. (A)
Heatley, David
Hunter, T. T.
*McCormick, W. J. M.
McIlroy, Gingles
Mackay, Allan (A)
Mackinnon, M. M.
Maclachlan, G. K.
McMillen, F. H.
Macnaughton, R. R.
Machin, J. H.
Melrose, D. R.
Muir, John
Pearson, R. G.
Philip, J. G. (A)
Philp, J. M.
Rogerson, Thomas
Ross, Alexander
Shaw, W. B.
Smith, G. F.
Snalam, H. E. (A)
Spence, Tom
Stuart, Peter (H)
Sutherland, D. J. B. (A)
Watson, A. H.
Wauchob, R. D.

* Denotes second class honours.
(A) Denotes credit in Anatomy.
(H) Denotes credit in Hygiene.

FOURTH YEAR:

Bargh, G. R.
Barrie, N. M.
Black, N. M.
Brotherston, J. G.
Brydon, D. A. D.
Colson, H. W.
Comline, R. S.
Coulton, R. H. M.
Gammack, K. C.
Gillespie, A. C.
Gracey, J. F.
Greenwell, G. E.
Hamilton, James
Hanson, B. S.
Harper, W. O.
Hogg, A. H.
Keswani, D. G. (Path)
Lindsay, George
Macdonald, D. W.
McGirr, J. L.
Marshall, W. S.
Moring, C. A. B.
Mulki, Fawzi
Oliver, D. F.
Proverbs, W. B.
Stenhouse, W. E. (Paras)
Tait, William

(Path) Denotes credit in Pathology.
(Paras) Denotes credit in Parasitology.

(To be continued.)

THE "RIG"

"The problem of the undescended testicle is one which at one time or another, and to a varying degree, troubles all breeders of livestock, but it is in regard to pedigreed horses and cattle that the matter may become most serious," observes a contributor in a recent issue of *The Scottish Farmer*, who continues: "Breeders of such stock are aware of the fact that a 'rig'—*i.e.*, an animal in which one or both testicles have not descended into the scrotum—is refused a licence by the official inspectors. Apparently this defect absolutely debars a stallion from obtaining a licence, but in the case of a bull rejected under similar circumstances special provision is made to permit the owner to appeal to the Department of Agriculture for reinspection of the animal by a member of the panel of breed referees, who, if satisfied that the animal is well up to licensing standard, and that it is in the interests of the breed that he should be licensed, may pass him for licence, and, the referee's decision being final, the Department is bound to issue a licence in accordance with that decision.

"In this connection it is interesting to note that recent research work appears to indicate that this defect may be due to the absence of certain hormone substances, thereby tending to prevent normal development, and that it may be remedied by the artificial introduction of these missing substances, which tend to promote normal growth and placing of the testicles. The treatment involved is probably relatively expensive, requiring administration by an expert, so that its application to animals of ordinary commercial merit is likely to be out of the question. On the other hand, in cases of animals of outstanding merit, it may be well worth while for the owner to consult an expert veterinarian as to the advisability of testing the efficacy of the new discovery and seeking to remove a glaring practical defect in an otherwise highly superior animal."

NOTES AND NEWS

The Editor will be glad to receive items of professional interest for inclusion in these columns.

J. H. Steel Memorial Gold Medal

R.C.V.S. Award to Major G. W. Dunkin

All his colleagues in the profession will applaud as cordially as did the Council of the Royal College of Veterinary Surgeons at its quarterly meeting at Harrogate—the proceedings of which will be recorded in our next Supplement—the decision of the sub-committee of present holders that the name of Major George William Dunkin, M.R.C.V.S., D.V.H. (Liv.), should be added to the select list of John Henry Steel Memorial Gold Medallists. The conferment of the premier scientific award within the power of the Governing Body of the profession to bestow gains additional distinction from its relative infrequency—the last award was made to Mr. William Woods in 1937—and the fact that the selectors have themselves been similarly honoured for the services they have rendered to the advancement of veterinary science.

We cannot infringe on the province of the President of the Royal College, whose agreeable duty it will be to present the Medal at the October quarterly meeting of Council, beyond saying that Major Dunkin's contributions, as recorded in the literature, to the progress of animal disease research—notably in respect of canine distemper, Johne's disease and tuberculosis—are such as to ensure that the Council could have made no selection more in keeping with the traditions of the award, which, as the regulations say, was founded " to perpetuate the memory of an earnest worker, so that his example may incite others, and benefit the profession by encouraging and rewarding merit." We may, however, justifiably recall Major Dunkin's productive 14-year tenure of the post of Superintendent of the Medical Research Council's Farm Laboratories at Mill Hill, which witnessed his association with the late Sir Patrick Laidlaw in the fruitful research into canine distemper. Fresh in the memory of our readers, too, will be the gratification with which the profession greeted the decision of the Agricultural Research Council, who are responsible for giving scientific guidance regarding all agricultural research aided by Government, to select Major Dunkin, in 1937, as the first Director of their Field Station at Compton, Berks—a momentous development already, under his able guidance, fulfilling its immense potentialities of benefit alike to the veterinarian and stock-owner.

* * * * *

NATIONAL A.R.P. FOR ANIMALS COMMITTEE

Arrangements have now been made for Veterinary Officers of the National A.R.P. for Animals Committee to use the supplies of bleach available at the larger stations of the G.W.R., for work carried out at these stations.

* * * * *

R.C.V.S. OBITUARY

Golledge, Jacob, Trowbridge, Wilts. Graduated May 16th, 1889. Died July 2nd, 1941; aged 75 years.

Mr. Jacob Golledge, after graduation, went to Trowbridge, practising there for some 40 years. He was well known to a large circle of farmers and other acquaintances in the West of England. The family tradition is being carried on by Mr. Golledge's two surviving sons, Mr. V. Golledge, Clarendon Road, and Mr. C. R. Golledge, " Staddlecote." Wingfield Road, Trowbridge. Sympathy is extended to them and to Mrs. Golledge, the bereaved widow.

* * * * *

MINISTRY OF AGRICULTURE NEWS SERVICE

Plan Now for Bumper Aftermath

Nitrogen to Increase Next Winter's Feeding-stuffs.—Only in exceptionally favourable circumstances is it possible to make first-class hay from a second cut. This is not due to lack of quality in the herbage. Indeed, the second growth is usually very leafy, succulent and tender and is deservedly prized for grazing on that account. But with the shortening days of late summer and autumn it can, as a rule, only be successfully preserved for winter feeding by ensilage.

First cuts, whether for hay or silage, have been reduced in area by ploughing-up and further curtailed by the east wind. Special efforts should therefore be made to secure a bumper aftermath. The way to do it is to stimulate growth. You must feed the plant before you can hope to feed the animal. Time is short, therefore the plant must have something it can take up at once, something soluble and quickly transmutable into plant substance. That something is nitrogen. It can be got from liquid manure or one or other of the nitrogenous fertilisers—sulphate of ammonia, nitro-chalk or nitrate of soda (1 or 1½ cwt. per acre). Apply immediately the hay crop is off. It will act as soon as rain has washed it in. Meadows should not be cut too closely, if the weather is very dry. The aftermath will spring quicker if the drought can be kept out by a covering of short herbage.

Meadows are not the only source of aftermath. Arable forage crops are even more responsive, more reliable and more productive, and all make good silage when haymaking would be difficult or impossible. Chief of such crops are clover, mixtures of temporary grasses and clovers, and lucerne. Pure clover or pure lucerne needs no top-dressing, but any mixture containing rye grass will respond readily to nitrogen for a second cut. Also, there will be oat and legume mixtures undersown with Italian rye grass. If the first cut has been made early the second will consist of a rich and highly nutritious growth of Italian rye grass sprinkled with young, green oats, peas or vetches which will generously repay a nitrogenous top-dressing. Do not hesitate: order nitrogen now. Every scrap of fodder will be needed next winter.

* * * * *

More Feed for Stock

Pulping Process Makes Wheat Straw Digestible.—Oat straw is good food. Barley straw is not quite so good. But wheat and rye straws are indigestible and of little feeding value. This applies also to rye and barley awns. Yet there is a process by which this indigestible material can be turned into starchy food that will replace sugar beet pulp and roots. The method consists of steeping chopped straws, chaff or cavings in a weak solution of caustic soda and water. This removes some of the indigestible materials and breaks down the tough fibres, so releasing the food. The Minister of Agriculture, after consulting the Agricultural Research Council, is anxious to see a widespread adoption on suitable farms of this process. The pulp is readily eaten by stock. It contains no protein and is fed in place of other starchy foods. Each ton of straw, after treatment, is equal in starch value to 1 ton of hay, 10½ cwt. of crushed oats, or 4½ tons of roots.

The plant is made up of two troughs connected by a sloping ramp. One trough is needed to soak the straw in caustic soda solution. It is left there for several hours and then forked out on to the ramp to drain. After draining, it is tipped into the other trough and thoroughly washed in running water to remove the soda. The pulp is then ready for feeding. The cost of treating straw,

allowing for water, caustic soda and labour, is about £3 per ton. The standard plant will easily treat 400 lb. of straw a day in two batches, making 1,400 lb. of pulp, sufficient for 28 head of stock at 50 lb. daily. Each batch requires 500-600 gallons of water, and the straw must be chopped. Some farmers have already built their own plants in brick or concrete. Very shortly a pre-cast concrete plant will be available in most districts. The County War Agricultural Committees will have copies of plans for them available on application, as well as a technical leaflet describing the process, methods of feeding, and so on. Straw pulp plants have already been installed on a number of farms and farmers are urged to visit the nearest, ask questions and form their own opinions. The plant costs £35-£40 to buy and set up.

* * * * *

Pig Clubs Help Breeders

Annual Outlet for at least 25,000 Weaners.—Mr. Cedric Drewe, M.P., President of the Small Pig Keepers' Council, had a good story to tell when he recently broadcast on the results to date of this movement he has done so much to foster. The Council registered its first club last July; to-day there are over 1,300 with a membership of 30,000. On present figures they will be producing some 3,000 tons of pig meat a year. This represents about 25,000 pigs. But the rapid success of the movement has partly created one of its difficulties in recent weeks, namely the supply of pigs for feeding. At first weaners could be bought for as little as 5s. apiece. But since then, the breeding of pigs has been curtailed and the demand from the clubs has gone up, and in some districts pig club members were becoming worried about future supplies. Steps are now being taken to solve this problem, however. Within the next few months many thousands of weaners will be made available and arrangements are being made to maintain these supplies. As the movement settles down and develops, breeders will gain more confidence and will produce more young pigs specially for the pig club market. The clubs have always been intended to stand on an agricultural foundation, not only to produce bacon from waste in war-time, but also to help pedigree breeders to keep their herds going in a difficult time against the happy day when they will have to expand again. The clubs can thus make a valuable contribution to agriculture through the outlet for weaners they now provide. This was one of the main reasons why it was decided at the beginning that the clubs should not breed their own pigs. Not enough breeders seem to be aware of these facts.

* * * * *

NEW SULPHONAMIDE COMPOUNDS

In an annotation (June 7th, 1941) the *British Medical Journal* states that a series of reports from the United States shows that rapid progress is being made there in synthesising and testing new sulphonamide compounds. Reference had already been made in the journal to sulphadiazine (2-sulphanilamido-pyrimidine), a drug with properties which at least in the pharmacological sense represent an immense advance. These are fully confirmed in a careful study of its absorption, distribution, and excretion by O. L. Petersen *et al.*[1] Higher blood levels are attained with this drug than with any other sulphonamide compound, and sustained longer, so that it evidently need not be given more often than six-hourly. The concentration in the blood plasma exceeds that in the blood cells, an advantage shared with sulphathiazole; on the other hand, where sulphathiazole is at some disadvantage—namely, in reaching the cerebrospinal fluid in a concentration only one-third of that in the blood—sulphadiazine resembles sulphanilamide and sulphapyridine in attaining a concentration two-thirds of the blood level. Conjugation is slight and not progressive, the acetyl compound being readily excreted. More welcome to patients themselves than any of these properties will be the fact that this drug does not cause nausea or even mental depression. It is known to be active against all the chief infections amenable to sulphonamide treatment, but comparative studies of therapeutic efficacy have yet to be made.

Two other new compounds have made their appearance in America, neither of which seems at first sight to have such outstanding properties as sulphadiazine, although each has its interesting points. "Promin" is the name given to the sodium salt of *p* . *p*′-diamino-diphenylsulfone-N . N′-dextrose sulphonate, and a series of papers by J. A. Toomey and his colleagues[2] records some preliminary clinical trials with it. This drug is best given intravenously in 5-gramme doses thrice daily; oral administration is said to cause more toxic effects, and to have also the disadvantage of irregular absorption. It appears from these studies only that the drug is reasonably well tolerated and has an action comparable with that of sulphanilamide on streptococcal infections. A more remarkable action is illustrated in the work of W. H. Feldman *et al.*[3] on experimental tuberculosis in the guinea-pig. The drug was here fed to the animals with no apparent difficulty or ill effect, and seems to have retarded the progress of the disease after inoculation with virulent tubercle bacilli in a very striking way, but the experiment was complicated by intercurrent infection and needs to be repeated. It was shown some years ago by Rich that large doses of sulphanilamide retarded the development of tuberculosis in the guinea-pig to some extent, but the effect achieved here was evidently greater.

A third new compound on trial in America is sulphanilylguanidine, which has quite different properties and uses. Owing to its low degree of solubility and slow absorption, it is possible, as E. K. Marshall *et al.*[4] have now shown, to maintain saturation of the intestinal contents with the drug, while the blood concentration remains low. It has accordingly been used, and with some success, in the treatment of bacillary dysentery. This is perhaps not quite as hopeful a sphere of action as, for instance, the urinary tract, but anything with a specific local effect on intestinal infections, even if less sure and speedy than what we can now see elsewhere in the body, will be a welcome innovation.

(1) *Amer. J. med. Sci.*, 1941, **201**, 357.

(2) *J. Pediat.*, 1941, **18**, 1, 6, 10.
(3) *Proc. Mayo Clin.*, 1940, **15**, 695.
(4) *Johns Hopk. Hosp. Bull.*, 1941, **68**, 94.

* * * * *

CHEMOTHERAPY INSIDE THE BOWEL

"In their attempts to discover an efficient intestinal antiseptic both the experimentalist and the clinician have so far had to admit defeat," asserts the *Lancet* in a recent issue. "For example, in the pre-sulphanilamide era, Graham[1] tested a large series of antiseptics belonging to the anil and styryl quinoline groups, as well as proflavine, hexylresorcinol and the silver thioglycerol sulphonate which Lumière claimed had almost sterilised the intestinal contents of a dog. All these preparations were powerfully bactericidal to the colon bacillus *in vitro* and were relatively non-toxic, yet when they were fed or given by stomach-tube to mice under carefully controlled conditions they produced no appreciable change in the intestinal flora of these animals. With the advent of the sulphonamides fresh attempts were made, but most of the experimental investigations aimed at proving the value of these drugs on mice infected *intraperitoneally* with different members of the salmonella and dysentery groups of organisms.[2] Since these experimental infections in no wise simulated the natural disease the results were little more conclusive than those obtained from the test-tube. Clinically there have been very few reports on

(1) Graham, J. G., *J. Pharmacol.* (1932.) **46**. 273.
(2) Buttle, G. A. H., Parish, H. J., McLeod, M., and Stephenson, D. *Lancet.* (1937.) **1**. 681.

the use of the sulphonamides in intestinal infections, although Harries, Swyer and Thompson[3] claimed some success with sulphanilamide and sulphapyridine in a small series of cases of typhoid fever.

Instead of using insoluble substances Marshall and his colleagues[4] in Baltimore have suggested that an intestinal antiseptic should be readily soluble in water but poorly absorbed from the intestine, so as to give a high concentration of the antiseptic in the bowel and low level in the blood and tissues, a situation somewhat analogous to the use of the sulphonamides as urinary antiseptics. With this objective they prepared a variety of sulphonamide compounds, of which sulphanilyl-guanidine appeared to be the most suitable for further tests. They give a full description of the preparation and chemistry of this substance, and have carried out extensive tests on its pharmacology and toxicity in mice, rabbits and dogs. The drug is poorly absorbed from the gut, and mainly by the small intestine, and the absorbed portion is quickly excreted. Acetylation occurs, as with other members of the series, and the conjugated compound is probably concerned in the toxicity of the drug on the kidney. The authors believe from their tests that the toxicity of sulphanilyl-guanidine is of the same order as that of sulphapyridine or sulphathiazole, and maintain that with reasonable care the risk of toxic effects will be small because so little of the drug is absorbed. It is as effective as sulphapyridine against pneumococcal infection in mice and rather less active than sulphanilamide in experimental streptococcal infection. Its most remarkable property is its bactericidal action on the coliform organisms in the mouse intestine. If this activity extends to the intestinal pathogens the drug may prove most valuable in the treatment of infections localised mainly or entirely to the intestine, such as bacillary dysentery and cholera. In the absence of comparable experimental infections its usefulness may have to be proved by clinical trial.

(3) Harries, E. H. R., Swyer, R., and Thompson, N. *Ibid.* (1939.) 1. 1321.
(4) Marshall, E. K., Bratton, A. C., White, H. J., and Litchfield, J. T. *Bull. Johns Hopk. Hosp.*, September, 1940, p. 163.

CORRESPONDENCE

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

The views expressed in letters addressed to the Editor represent the personal view of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

* * * * *

BUREAUCRACY AND THE VETERINARY PROFESSION

To the Editor of the Veterinary Record

Sir,—I had noticed that veterinary representation was absent on the Agricultural Improvement Council for Scotland, but with my usual diffidence I did not venture to remark on it. Now, Sir, however, as you have considered the omission of such importance as to merit an Editorial, may I offer what seems to me some explanation as to why the veterinary profession is not represented? I have plenty of material to hand in the various letters and reports recently published in *The Veterinary Record* and other publications. They are, I think, well worth recounting and summarising. Italics are mine.

(1) "That a medical rather than a veterinarian has been appointed to this key position (secretaryship) in agricultural research in this country *is due simply and solely to the fact that, in the considered opinion of those responsible for the appointment, there was no veterinarian who could reasonably be regarded as suitable.*"—(Crew. *V.R.* May 31st, 1941.)

(2) "Evidently there must be something of extreme importance lacking on our part in the veterinary profession, otherwise a *friend* of ours who is *not* a member, would not feel it his duty to come and guide us. . . . Why is it that we do not have our proper status, as do our colleagues in foreign countries, and, indeed to a great extent in our Dominions? The answer is obvious; many of our members are suffering from 'inferiority complex' and PREFER *to be 'Yes men' to encroachers on our preserves who are anxious to rule our affairs and take over our 'key' positions, thus establishing a precedent* which is *prejudicial* not only to the *present*, but also to the *future* generations of veterinary surgeons.—(Edward Morgan. *V.R.* June 4th, 1941, p. 350.)

(3) "In sequence to the trouble in the industry induced by the *action of the Ministry* in May last in introduring—*it was believed prematurely*—a new tuberculin produced for the testing of dairy stock, an influential deputation representative of the English and Scottish herd owners associations was received by the Minister on May 12th.

"While recognising the value of the double intradermal test as carried out *prior* to May last, the time has arrived when *additional research measures*, with the *maximum co-operation* on the widest scale are required.

"*The confidence of herd owners in Scotland has been badly shaken in the past year*, and the *real possibility* of their withdrawing from the existing scheme is a matter of concern to the committee.

"In the meantime we respectfully submit that the weight of evidence, whether received from the scientific or practical side, is overwhelmingly in favour of *accepting* the recommendation *to discontinue the use of tuberculin introduced in May last.*"—Dr. Chalmers Watson's evidence. *V.R.* June 21st, 1941. p. 362.)

(4) "The *Minister* (?) has promised that the present practice of the interpretation (!) of the Weybridge tuberculin will be discontinued at an early date."—(*V.R.* May 31st, 1941, p. 315.)

(5) "Although I do not suppose most of us would accept the picture of medical aggressiveness which has been given, it is doubtful if a *small and poor profession will ever be safe from political interference by its more powerful neighbours.*"—(Richardson. *V.R.* June 28th, 1941. p. 379.)

"Small and poor" sums up the situation, and in addition to "its more powerful neighbours" we may look closer home as regards the "Yes men" mentioned by Edward Morgan.

For a "democracy" we are singularly "bureaucratic." This bureaucratic dominance of the veterinary profession should be the *first concern* in the policy of the "National." We are entirely dominated by Whitehall and one need not go further than the "Weybridge tuberculin test" to gauge the *competency of bureacracy* to formulate any reasonable practicabilities.

Now, let me give one last excerpt which I hope will put pep and vim into the members of the Survey Committee—and I trust it will have the desired result; *i.e.*, to get a quick release from the deadening effect on the profession of the bureaucrats: and I offer a suggestion as to how this may be brought about. That is, to have part IV of the Agriculture Act revoked or amended to *our* requirements. These requirements are set out in the "National Scheme" which was nullified by the action of the bureaucrats in augmenting their own service by some 200 per cent. *and* creating a "vested interest" for many members of the profession by the institution of "panels." The prospect of accomplishing this looks pretty hopeless, as the Civil Service is so strong in itself, and, moreover, by its Hitler-like policy of *subsidising many members of the profession until such time as they can be done without*, it created a "vested interest" to gain its own ends. The excerpt is as follows:—

"This country and the Empire bristle with brains exactly suitable for helping the country at a time of such crises. *It is not only incorrect, but absurd, to suggest*

that the men are not to be found. There are any number of them. *The trouble is, so many have been frustrated by an overgrown and rather ridiculous bureaucracy.* The *greatest enemy of Britain,* and the most serious obstacle in the path of victory *is that type of official who honestly believes that the British Empire is some sort of private reserve of his own,* and the war his private affair in which no outsider has the slightest right to interfere, *except under his orders. Such must be ruthlessly swept away,* for their *collective* influence upon the affairs of the kingdom is harmful. Without doubt we have the *natural resources* and the *latent ability* to prevent the Germans from achieving their objective, but it sometimes looks as if we have *not got the ability to destroy this absurd, even fantastic bureaucracy,* which is weighing down the country when it should be soaring to unprecedented efforts and achievements."—(*Foreign Affairs,* July 1st, 1941.)

Is it too much to hope that the "National," not only the Council but all its members, will study this excerpt and apply it to this exigency (*i.e.,* the urgent necessity) of the profession?

Yours faithfully,
J. W. Hall Masheter.

Ruddle House,
Newnham-on-Severn,
Gloucestershire.

July 6th, 1941.

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"A PRACTITIONER'S COMPLAINT"

To the Editor of the Veterinary Record

Sir,—The above, by your correspondent, Mr. W. Shipley, can be echoed by many practitioners, and probably with even greater reason.

Here is one example of the "even greater grouse," the facts of which can be vouched for.

A few weeks ago, two practitioners in the same area, both holding Panel A appointments in the State Veterinary Service, were given four days' notice to cease doing their work under the Ministry "until further notice," no reason or explanation being given for this procedure. Not quite a month later, one of these practitioners received an allotment of work to be done for the current quarter, which amounts to one-third of that usually falling to be done within the same period. It transpired that the Ministry had installed a whole-time officer in the town, who presumably took over the other two-thirds of the work previously done by the practitioners. This Officer has been working at a seaport in another county and this port having been badly "blitzed," his work there was apparently not further needed, so this singularly cold and peremptory example of "robbing Peter to pay Paul" was carried out at the expense of these two practitioners. One of them has held his appointment as Veterinary Inspector under the County Council, and since under the Ministry, for over 30 years, so can one wonder that he feels keenly the injustice of such cavalier treatment, which is also a most serious financial loss.

Moreover, as Mr. Shipley indicates, when the changeover was made, it was previously this kind of thing which the profession was given assurance would not be allowed to happen. Speaking at the Bournemouth Veterinary Congress, Mr. W. S. Morrison, as Minister of Agriculture, said that "it was not the intention of the Government that the State Veterinary Service should be run at the expense of the general practitioner," and the profession accepted this pledge, so definitely given, with considerable relief. I suggest that Mr. Shipley's complaints, and such cases as are here briefly detailed, are definitely breaches of this pledge, and, as such, merit the attention of the N.V.M.A. If there is to be any reduction in the staff employed in the Service, it ought not to be done by cutting down the field work of the main body of the profession, whose priority work it surely is, from its long record of clinical experience of competent service. But, as Mr. Shipley points out, this cutting down of the practitioner's work *is being done in increasing measure;* also there is little doubt that many cases are being suffered in silence, and the need for protest would seem to be urgent. But what is not known cannot be redressed, and practitioners would only be doing justice to themselves and to their colleagues by voicing such grievances, either directly to the Consultative Committee of the Association, or through the Society of Veterinary Practitioners, and should give precise facts and evidence in support of their complaints.

Yours faithfully,
E. P. Edwards.

Prestatyn,
N. Wales.
July 14th, 1941.

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To the Editor of the Veterinary Record

Sir,—Mr. Shipley's letter in your issue of July 12th raises some interesting points concerning general practice.

I know I am voicing everyone's opinion when I say that he has my most sincere sympathy for the loss he has sustained owing to enemy action; it is indeed hard to see one's livelihood practically disappear owing to no fault of one's own, except maybe that fault, common to all of us of "pre-1914 age," of fatal complacency during the past 20 years, which is costing us so dear to-day.

But with regard to his second point I must profoundly disagree. Panel A may be a useful adjunct, but to allow it to become the major part of a general practice, to the detriment of that practice, is simply inviting disaster, besides being very much against the best interest of the profession, which in the last analysis depends entirely upon the goodwill of the agricultural community, which is only maintained by providing efficient service at reasonable rates.

I fear that I am unable to understand Mr. Shipley's remark about "leaving us only the disagreeable and least remunerative part of the practice"; personally I find few things more disagreeable than doing *post-mortem* examinations of pigs in weather like that prevailing at present, or in the icy blasts of winter, or the soul-destroying job of examining the innumerable udders of herds of cows, while interesting work among all classes of animals, which is also remunerative, is being put off. I have also yet to find that farmers are "proverbially long-winded"—what proverb please? My experience is that if the accounts are efficiently managed and not altogether "too hot," not more than 1 per cent. of the gross earnings become bad debts.

I would urge the profession to consider very deeply its best interests in the long run and not be led to take a short view by the apparently overriding urgency of the problem of the moment.

I have always felt that dependence on a Government subsidy by practitioners is a most weak-kneed policy and if persisted in will certainly lead to loss of independence and a general lowering of efficiency. From a considerable experience in many parts of this country, and elsewhere, I am convinced that there is plenty of work—in normal times—for the *efficient* practitioner in nearly all areas, and a subsidy should be arranged for in those districts unable to maintain a veterinary surgeon in the normal way.

The future of the profession lies in our ability to train it to grapple with the problems of animal husbandry and the prevention and treatment of disease, not in begging for assistance for practitioners.

Yours faithfully,
G. S. Muir.

Greenmount,
Needham Market,
Suffolk.
July 13th, 1941.